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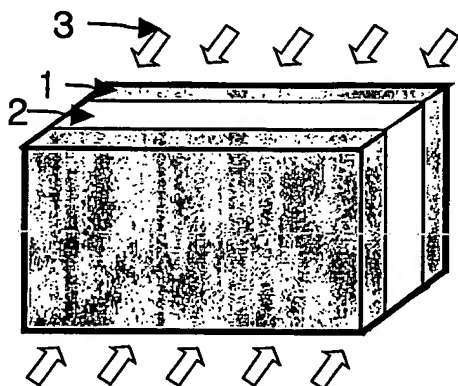
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(54) Title: MULTI-LAYERED PHOTOBIOREACTOR AND METHOD OF CULTURING PHOTOSYNTHETIC MICROORGANISMS USING THE SAME



(57) **Abstract:** Disclosed is a multi-layered photobioreactor capable of producing a useful metabolite simultaneously with the vegetative growth of a photosynthetic microorganism, including a first culture region (2) containing the microorganism and a culture medium to execute vegetative growth of the microorganism, and a second culture region (1) closely layered on a side surface of the first culture region and containing a culture medium and the microorganism to produce the useful metabolite. The two culture regions are separated from each other with a transparent partition, and the light sufficiently strong for induction of the useful metabolite production is irradiated to the first culture region, while the intensity of the light is reduced to a level proper to the microbial growth during a transmission of the light through the first culture region to arrive the second culture region. Also, the present invention discloses a method of culturing a photosynthetic microorganism using the photobioreactor.